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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
TS 5575 PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP 03/04853	07.05.2003	24.06.2002

International Patent Classification (IPC) or both national classification and IPC
C10G67/06

Applicant
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1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
19.01.2004	10.09.2004

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP 03/04853

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-15 as originally filed

Claims, Numbers

1-6 received on 02.06.2004 with letter of 02.06.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6
	No:	Claims	
Inventive step (IS)	Yes:	Claims	4,6
	No:	Claims	1-3,5
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1 US-B1-6179994
D2 US-B1-6332974
D3 GB-A-815264

V.1 Novelty

The subject-matter of amended claims 1-6 appears to be novel and to satisfy the criterion set forth in Article 33(2) PCT.

Document **D1** (claim 1; figure; column 1, line 66 - column 2, line 7 and column 9, lines 11-60), which is considered to represent the closest prior art, discloses a process for producing isoparaffinic lubricant base stocks comprising the hydroisomerisation of a waxy Fischer-Tropsch feed, the fractionation of the isomerate into lower boiling fuel fractions and a 650-750°F+ lube oil fraction, the catalytic dewaxing of this heavier isomerate to reduce the pour point and the vacuum distillation of the dewaxate to separate the lube oil base stock from lighter fractions. The catalytic dewaxing of the 700°F+ hydroisomerate fraction derived from a Fischer-Tropsch feed produces a 950°F+ fraction with a kinematic viscosity of 11.9 cSt at 100°C (examples 1-3, tables 3 and 5).

The subject-matter of independent claim 1 of the present application differs from the process of document D1 in that a white oil is prepared from the Fischer-Tropsch derived bottom distillate fraction by further contacting this lubricant base stock with a heterogeneous adsorbent. Document D1 further fails to disclose a Fischer-Tropsch derived medicinal white oil.

The subject-matter of independent **claims 1 and 5** as well as of corresponding dependent claims 2-4 and 6 is therefore new.

V.2 Inventive Step

V.2.1 The subject-matter of amended claims 1-3 and 5 does not involve an inventive step and does not satisfy the criterion set forth in Article 33(3) PCT.

Document D1 is regarded as being the closest prior art to the subject-matter of independent claims 1 and 5.

The problem to be solved by the present application may be regarded as to provide a process for preparing white oil from a Fischer-Tropsch derived bottom distillate fraction.

Document D3 (claim 1; figure 1; page 1, lines 28-35 and 74-91) discloses a process for producing white oils from lubricating oil fractions by chromatographic separation of impurities like coloured substances with activated alumina as adsorbent.

It is clear from the description that the following features are essential to the definition of the invention:

(1) the feed is a relatively heavy Fischer-Tropsch derived feed with a specific composition (page 5, lines 15-23 and page 6, lines 11-18);

(2) the distillate bottom product upgraded by contact with a heterogeneous adsorbent is obtained by (a) hydrocracking/hydroisomerisation of the Fischer-Tropsch derived feed, (b) separation of a base oil precursor fraction having a T90 wt% boiling point between 350 and 550°C from the hydroisomerate, (c) pour point reduction of the base oil precusror fraction and (d) isolation of the heavy bottom distillate fraction (page 4, line 30 - page 5, line 14 and page 9, lines 4-19);

(3) the medicinal white oil has a specific non-cyclic isoparaffins content, a specific Saybolt colour and specific UV adsorption spectra values (page 13, lines 1-10).

Since independent claims 1 and 5 do not contain these features they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

Claim 3 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved (see "wherein a medicinal white oil is obtained having"), which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

In view of the chromatographic separation process disclosed by document D3, the person skilled in the art would consider enlarging the synthetic lubricating oil preparation process of document D1 by adding an adsorption step in order to separate coloured substances from the lube base oil stock and so obtain white oil without exercise of an inventive step.

The use of active carbon as adsorbent is common practice and the skilled person would therefore regard it as a normal option to select this type of heterogeneous adsorbent in order to solve the problem posed.

Hence the subject-matter of **claims 1-3 and 5** is considered to lack an inventive step.

Document **D2** (claim 1; figure; column 1, line 66 - column 2, line 7 and column 9, lines 11-60) discloses a process for producing isoparaffinic lubricant base stocks comprising the hydroisomerisation of a waxy Fischer-Tropsch feed, the fractionation of the isomerate into lower boiling fuel fractions and a 650-750°F+ lube oil fraction, the catalytic dewaxing of this heavier isomerate to reduce the pour point and the separation of lower boiling hydrocarbons of the dewaxate from the wide cut base stock. This document could also be regarded as being the closest prior art to the subject-matter of independent claims 1 and 5.

V.2.2 The solution to the above mentioned technical problem proposed in **claims 4 and 6** is considered to involve an inventive step in the sense of Article 33(3) PCT for the following reasons:

The separation of a base oil precursor fraction having a T90 wt% boiling point between 350 and 550°C from the hydroisomerate of a specific heavy Fischer-Tropsch derived feed results in white oils with kinematic viscosities at 100°C of more than 8.5 cSt.

The process according to claim 4 further appears to produce a medicinal white oil with a specific non-cyclic isoparaffins content, a specific Saybolt colour and specific UV adsorption spectra values as defined in claim 6. None of the available prior art documents discloses a medicinal white oil having the physical properties defined in claim 6.

C L A I M S

1. Process for the preparation of medicinal white oil or a technical white oil from a Fischer-Tropsch derived paraffinic distillate bottom product, wherein said bottom product is contacted with a heterogeneous adsorbent.

2. Process according to claim 1, wherein the adsorbent is active carbon.

3. Fischer-Tropsch derived medicinal white oil having a kinematic viscosity at 100 °C of more than 8.5 cSt.

4. Process according to any one of claims 1-3, wherein said bottom product is obtained by:

(a) hydrocracking/hydroisomerisating a Fischer-Tropsch derived feed, wherein weight ratio of compounds having at least 60 or more carbon atoms and compounds having at least 30 carbon atoms in the Fischer-Tropsch derived feed is at least 0.2 and wherein at least 30 wt% of compounds in the Fischer-Tropsch derived feed have at least 30 carbon atoms;

(b) separating the product of step (a) into one or more distillate fraction(s) of lower boiling fractions and a broad range base oil precursor fraction;

(c) performing a pour point reducing step to the broad range base oil precursor fraction obtained in step (b);

(d) isolating a heavy bottom distillate fraction by distilling the product of step (c); and

(e) contacting said bottom distillate fraction with a heterogeneous adsorbent.